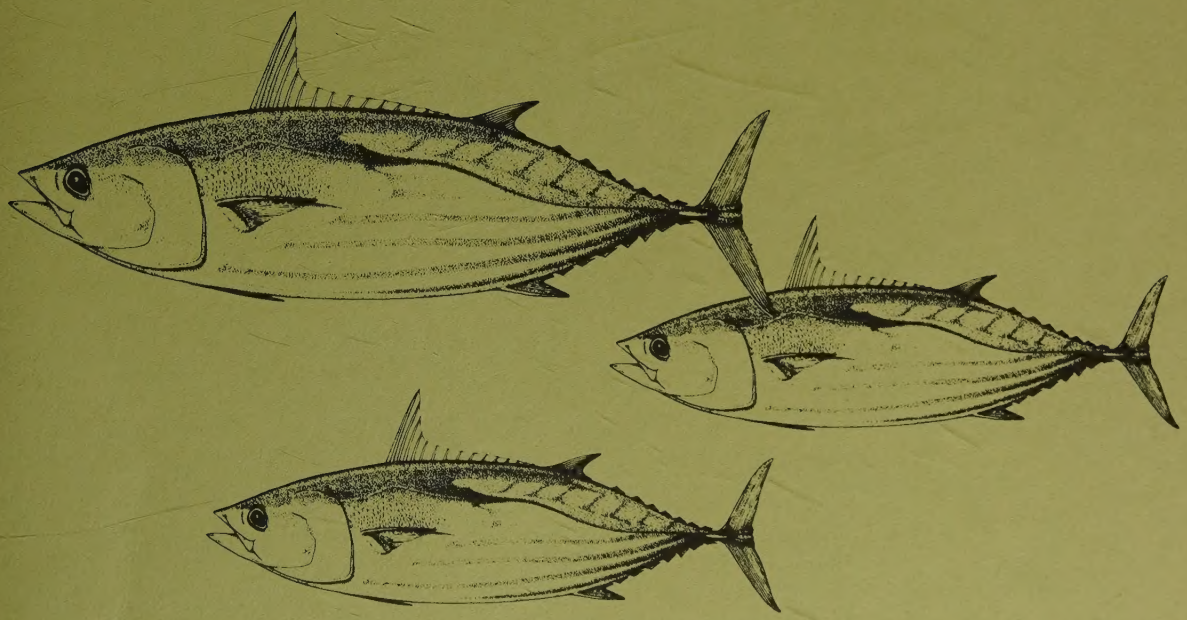
DECEMBER 1980
No. 12

FISHING INFORMATION

Southwest Fisheries Center-La Jolla, California



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NATIONAL MARINE FISHERIES SERVICE
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FISHING INFORMATION

DECEMBER 1980, No. 12

EDITOR: JAMES A. RENNER

I. Barrett, Director, SOUTHWEST FISHERIES CENTER
J. Carr, Deputy Director

PREFACE

This publication, Fishing Information, appears monthly and contains 1) fishery advisory information, 2) a narrative description of pertinent surface temperature conditions, 3) charts of winds and pressures for the eastern North Pacific, 4) charts of sea surface temperature for the North Pacific and eastern tropical Pacific, and 5) charts of subsurface temperature structure in the eastern North Pacific.

A supplement to Fishing Information appears at 15-day intervals throughout the year. It contains a chart of sea surface temperature (contoured at $2^{o}F$ ($1^{o}C$) intervals) from Baja California to Vancouver Island out to about $135^{o}W$. Special bulletins are published in conjunction with the 15-day sea surface temperature charts which include short-term projections of albacore distribution and locations of productive fishing areas, information on oceanographic and atmospheric conditions, and other information as is appropriate during the albacore fishing season.

NOTICE TO SUBSCRIBERS

Publication of FISHING INFORMATION and its 15-day supplements by the National Marine Fisheries Service will cease with the December 1980 issue. Beginning with the January 1981 issue, responsibility for the preparation of the types of charts currently published in Fishing Information will be transferred to the National Weather Service and the National Environmental Satellite Service. Scientists of the Fishing Information staff are currently working with National Weather Service and National Environmental Satellite Service personnel to ensure that the follow-on publication to Fishing Information meets user needs and that a smooth transition takes place.

We here at the National Marine Fisheries Service wish to thank you for your continued interest in, and support for, FISHING INFORMATION and urge you to lend similar support to the new National Weather Service/National Environmental Satellite Service publication.

To cancel delivery of this publication in the event you no longer need to receive it, or to change the delivery address if you are moving but still need to receive it, please notify us by writing: Editor, Fishing Information, National Marine Fisheries Service, Southwest Fisheries Center, P. O. Box 271, La Jolla, California 92038.

Submitted for publication - February 13, 1981

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ENVIRONMENTAL CHARTS ANALYZED BY:

F. Miller (Figures 8 and 9)
F. Miller (Figures 1, 2, 3, 4, 5, 6, 7, and 15-day Supplement)

TECHNICAL EDITOR:

R. Allen

CARTOGRAPHY:
R. Allen, H. Orr

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  H. Ewen at Cape St. James Light
  R. W. Moe at Kains Island Light
  M. V. Stewart at Amphitrite Point Light

Scripps Institution of Oceanography, La Jolla, California

Sea Surface Temperature and Environmental Conditions

Forrest R. Miller

Eastern North Pacific

During December 1980 the Aleutian low was located near 45°N, 165°W which was more than 900 nautical miles southwest of the normal position (compare Figures 1 and 2). In the vicinity of the low pressure center, sea surface pressures were more than 16 millibars below normal. Above normal pressures developed over Alaska where the Aleutian low usually is the dominant feature. The eastern Pacific high pressure system was centered near its normal position at 30°N, 135°W. Strong southwesterly surface winds prevailed along the southern and eastern periphery of the Aleutian low (Figure 2). As a result, wind mixing of the ocean surface layer was extensive from 30°N to 45°N west of 140°W. Storm fronts followed the strong wind band and crossed the west coast from northern California to British Columbia. The high pressure ridge over central California effectively blocked most of the weather systems from entering southern California.

Sea Surface temperatures (SST's) reflected stronger than normal north-south gradients of isotherms west of 150°W from 35°N to 45°N (Figure 3). In this part of the north Pacific SST's were more than 1°C below normal (Figure 5) where wind mixing of the ocean was wide spread and weather fronts generated persistent cloud cover. East of 150°W, SST's were predominantely above normal, especially from 40°N into the Gulf of Alaska. Northward transport of warmer water into the Gulf of Alaska by frequent southerly winds contributed to SST's which cooled at less than seasonal rates. The patterns of positive and negative anomalies during December 1980 were similar to those in December 1979. This is reflected in Figure 7 which reveals small SST differences between December 1980 and 1979 over most of the central Pacific.

Western North Pacific

The western extension of the Aleutian low pressure system, dominated the wind circulation north of 30°N. The subtropical high pressure ridge was weaker than normal and centered along 25°N. The strongest wind circulation and ocean mixing took place in the Bering Sea, along the coast of Japan and from 35°N 45°N east of 155°E. The north Pacific Ocean front was most pronounced from Central Japan across the western Pacific north of 40°N (Figure 4). The elongated pattern of negative anomalies along the Coast of Japan and in the central Pacific, with a wide band of positive SST anomalies in between, reflected the ocean conditions that intensified the northern frontal boundary (Figure 6). A subtropical ocean front was also apparent near 25°N from Taiwan to the Central Pacific. The areas of alternating positive and negative anomalies south of 30°N generated the pronounced north-south temperature gradients in the sub-tropics.

Eastern Tropical Pacific

During December 1980 in the northern hemisphere the areas with SST's greater than 28°F decreased significantly (Figure 8). Three areas north of 5°N, which had SST's above normal in November 1980, experienced SST's more than 1°C below normal this month (Figure 9). Persistent, strong northerly winds contributed to wind mixing and ocean cooling. In the Gulf of Panama and along the equator, SST's were below normal especially from the Galapagos Islands to the coast of Ecuador. Based on available data, SST's were below normal along the coast of Peru also. As a result of colder SST's along the equator and above normal SST's north of the equator from 85°W to 105°W, the equatorial ocean front was more pronounced than usual (Figure 8). Most of the southern hemisphere from 80°W to 150°W continued to experience

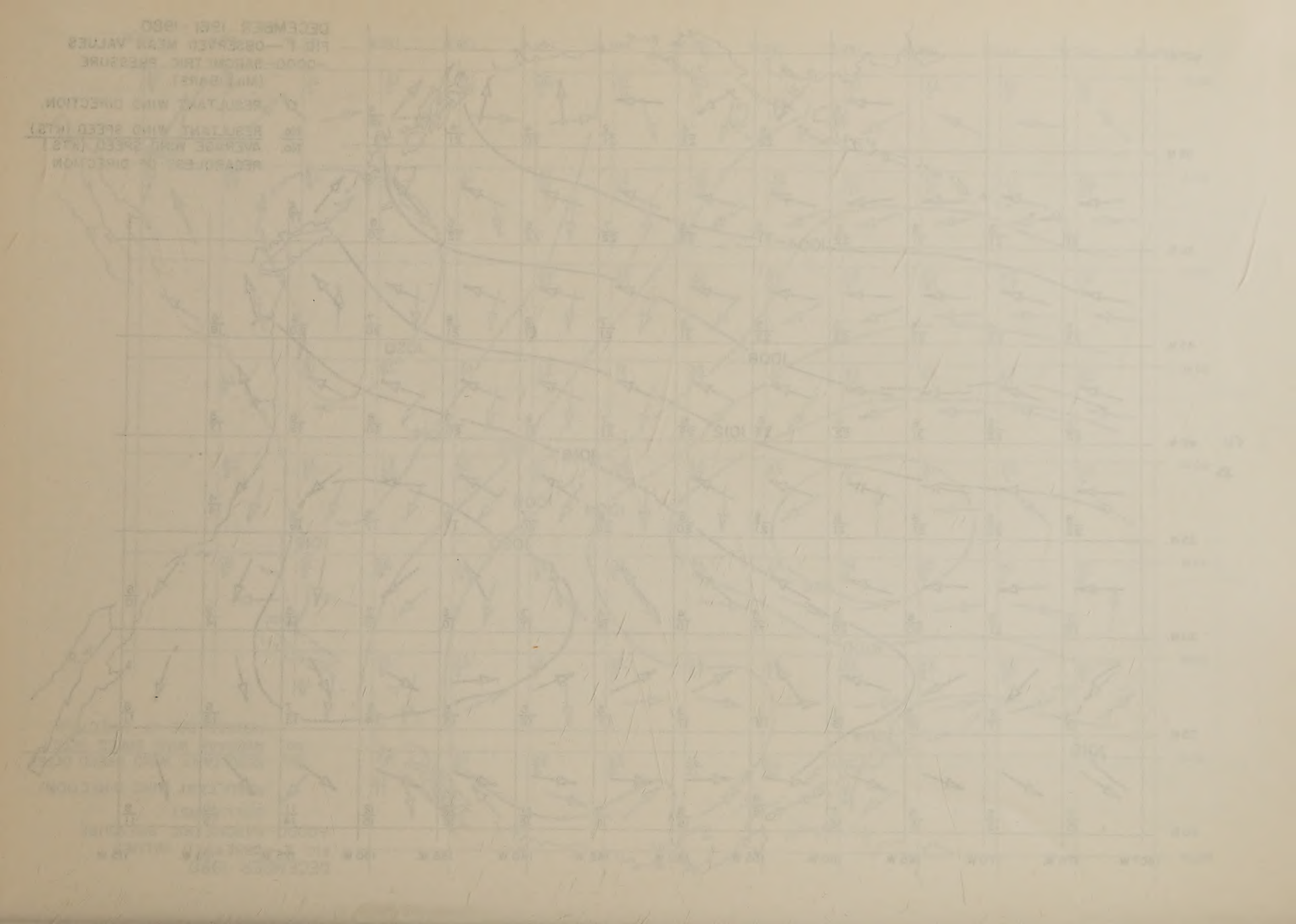
SST's above normal. There has been a gradual shift of the positive SST anomalies from the coastal region of South American toward the west during the past 4 months. Although no marked decrease in area covered by positive SST anomalies is expected in the southern hemisphere during the next three months, negative anomalies along the coast of Peru are expected to prevail.

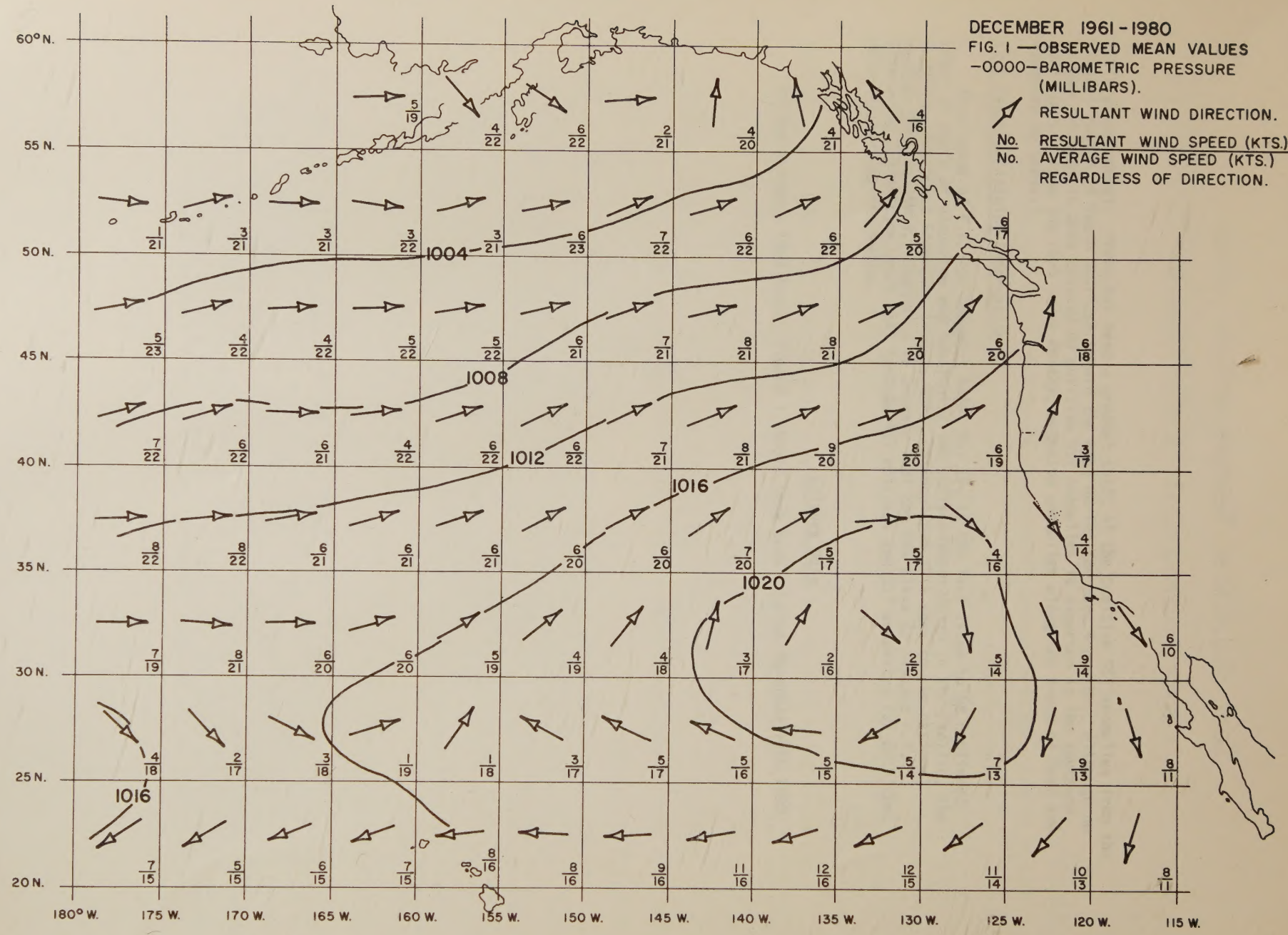
Last Issue of Fishing Information

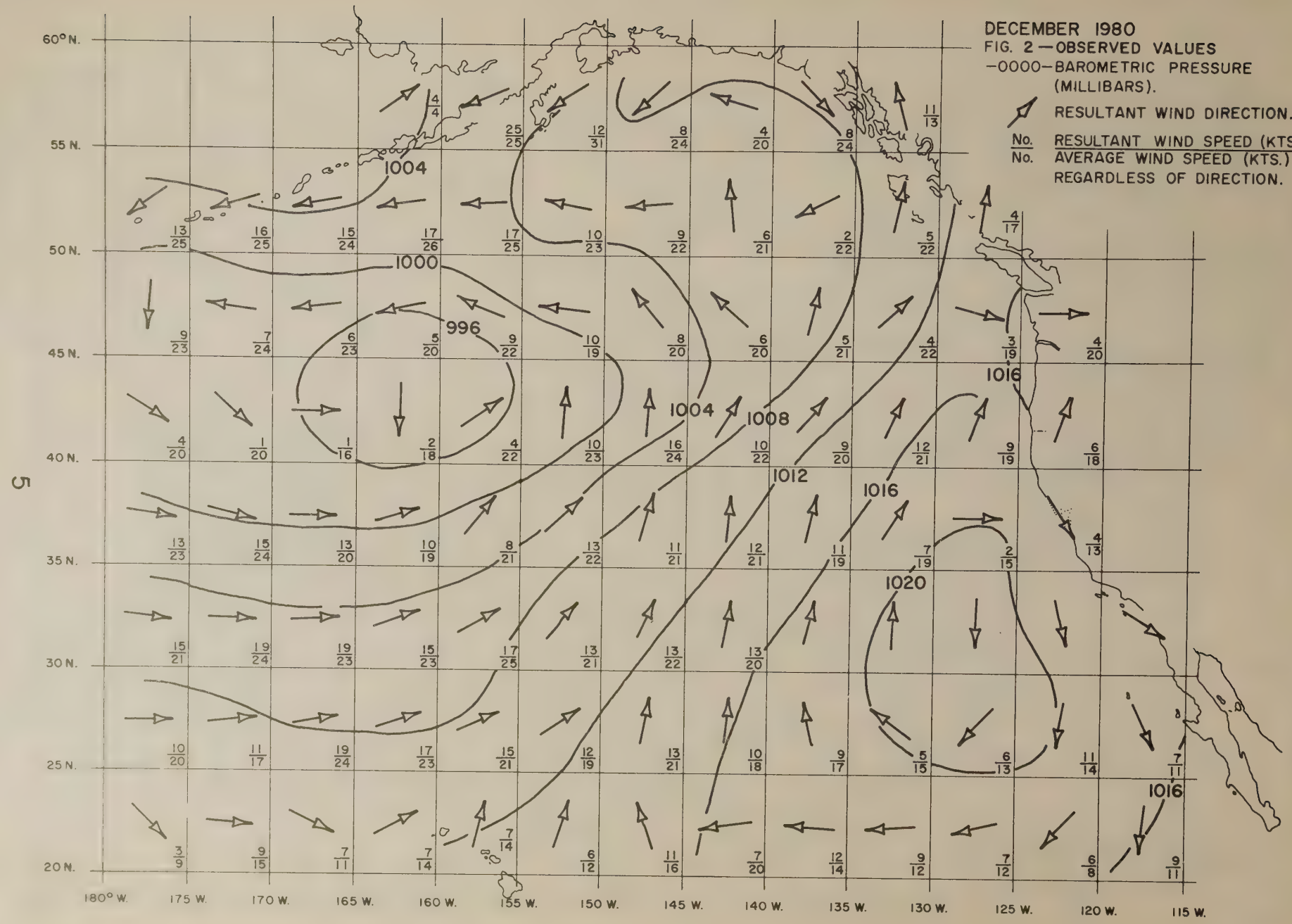
This issue of F.I. for December 1980, No. 12, is the last issue to be published. After 21 years of preparing and publishing sea surface temperatures in the Pacific, the Director, Southwest Fisheries Center, NMFS, relinquished this task to the National Weather Service (NWS). Beginning in January 1981 the NWS plans to replace F.I. with a new publication which will include SST analyses and SST anomalies for both the Atlantic and Pacific Oceans.

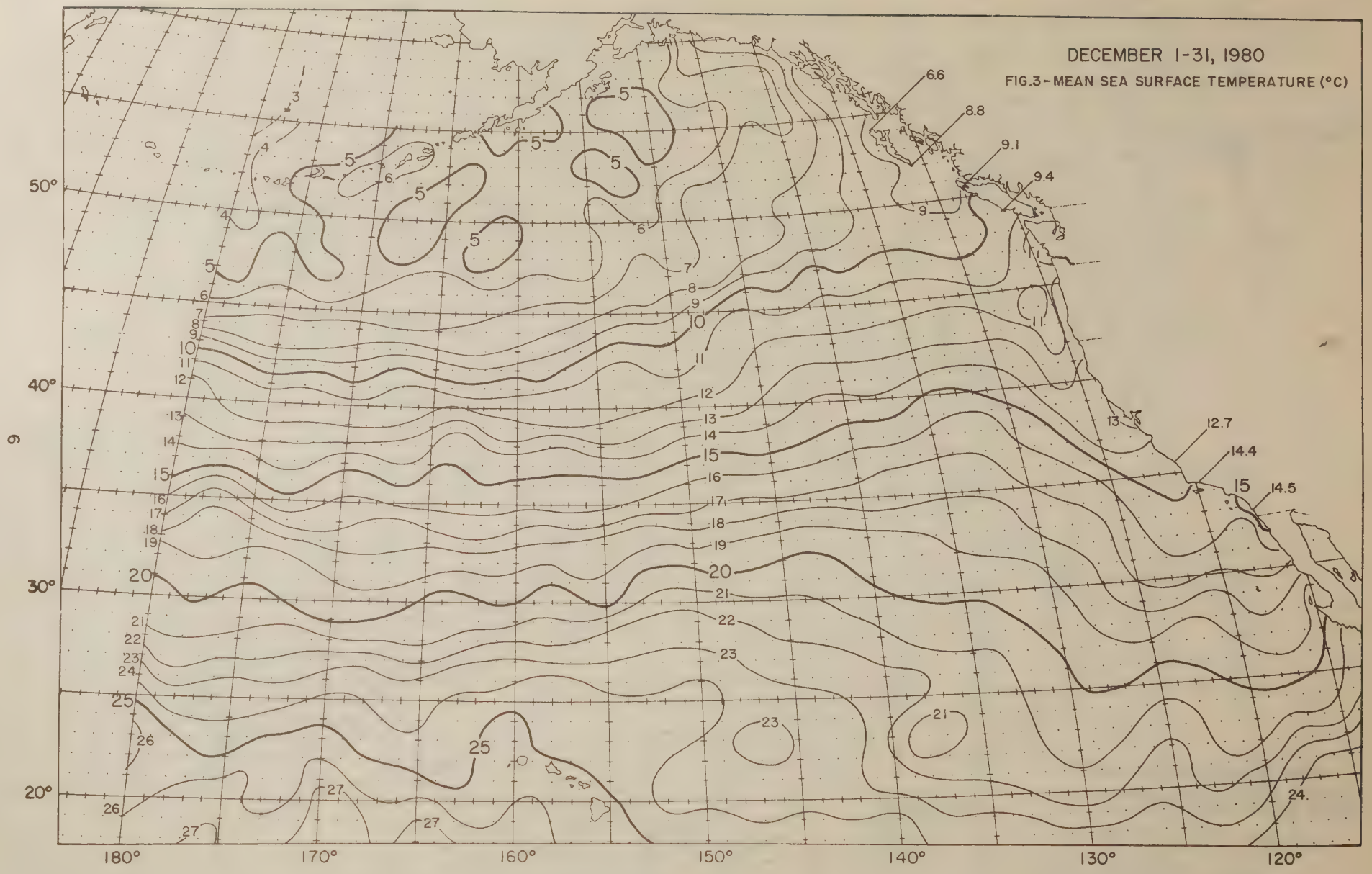
Editors Note

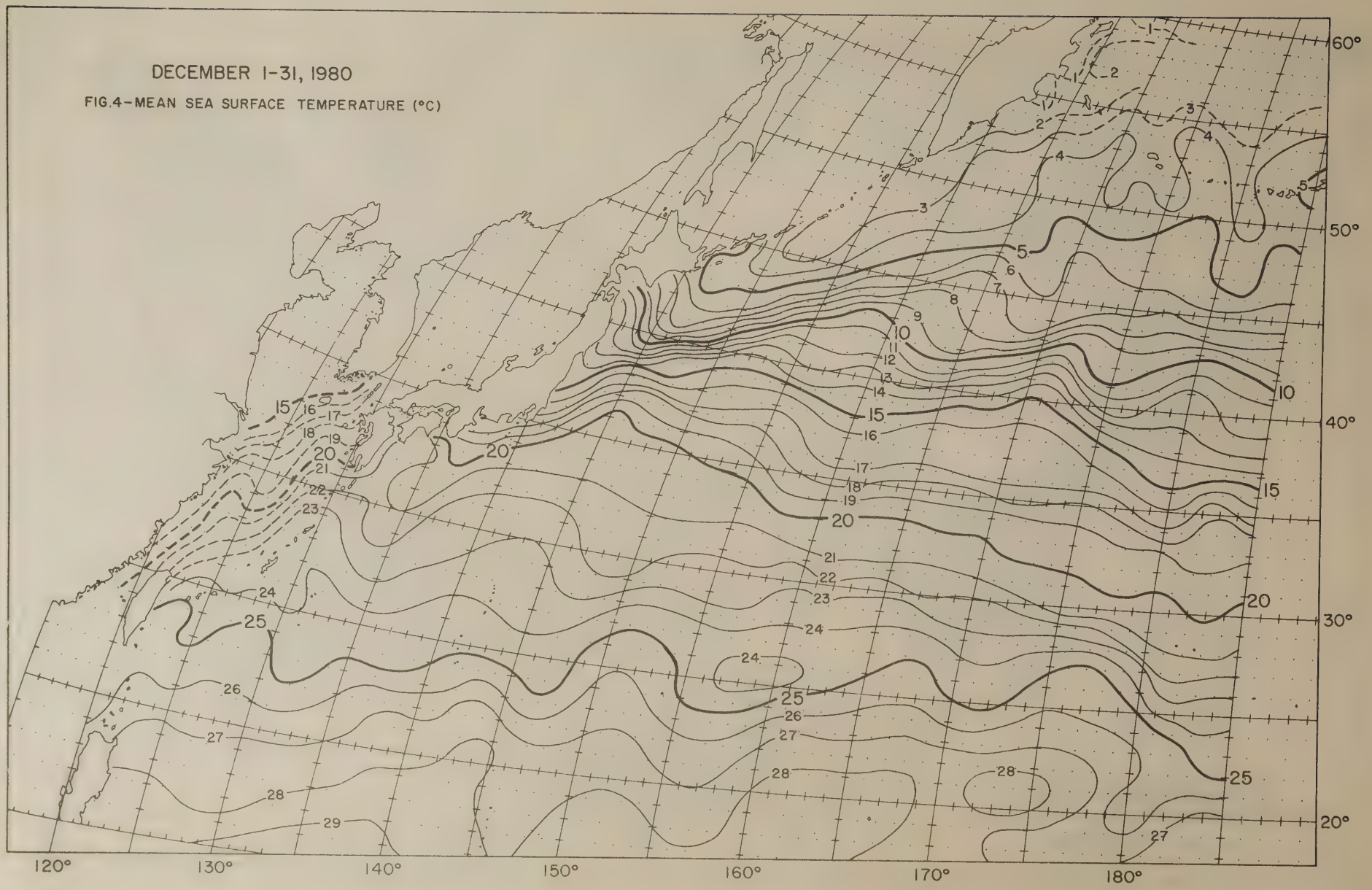
In the November 1980 issue, Figure 1 should have been labeled: November 1961-1980.

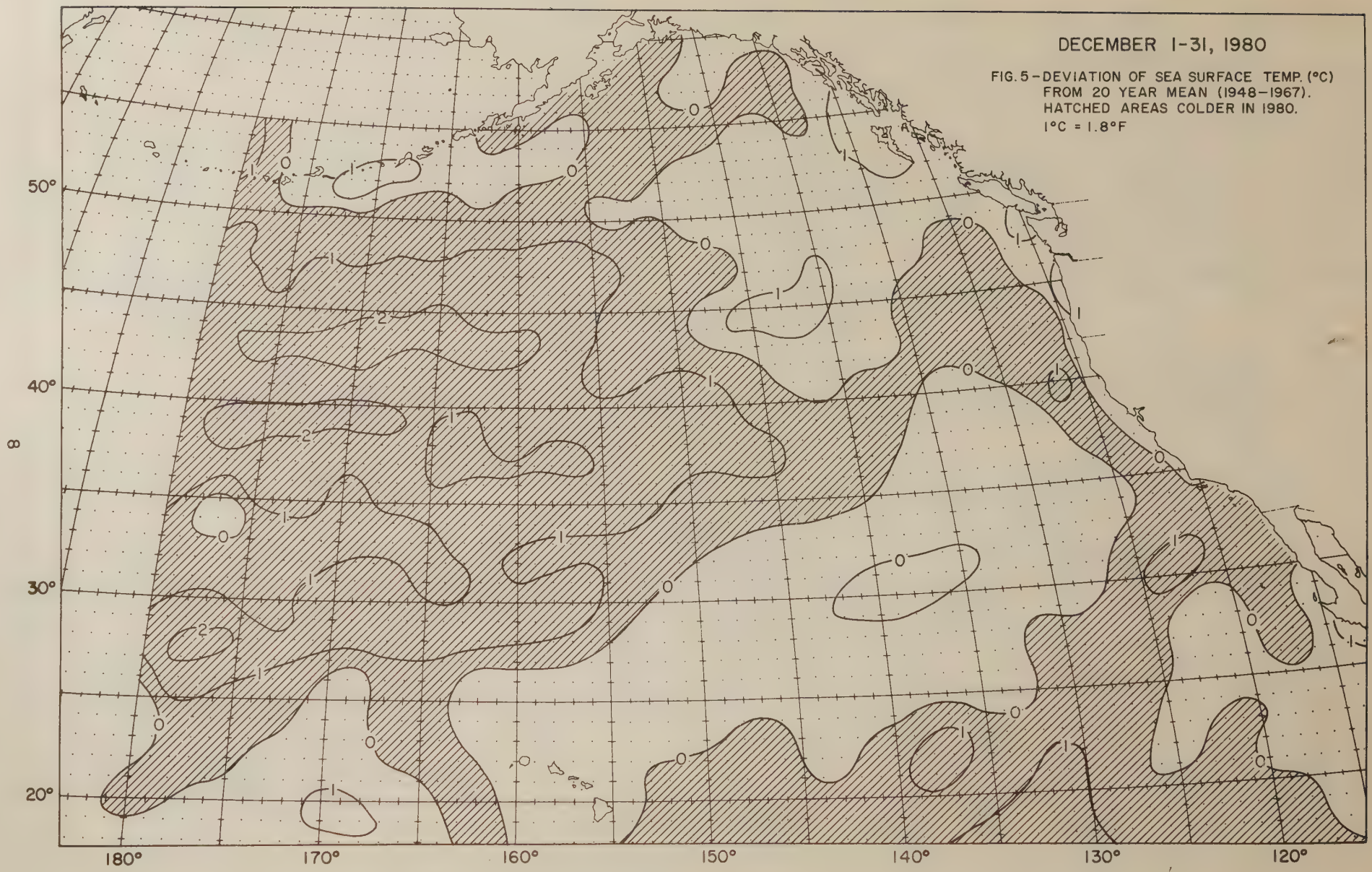


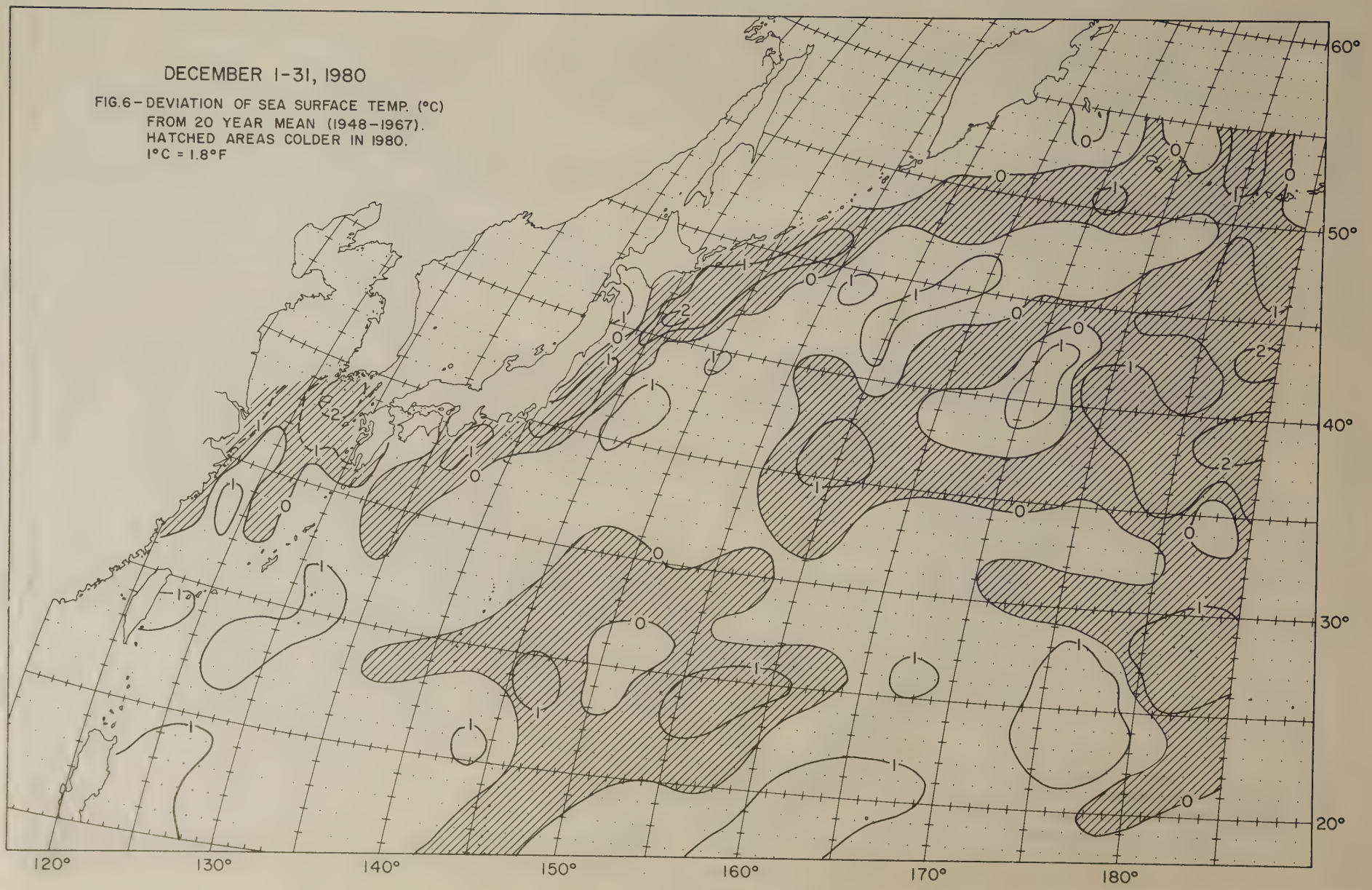

DECEMBER 1961-1980
FIG. 1 —OBSERVED MEAN VALUES
-0000-BAROMETRIC PRESSURE (MILLIBARS).
RESULTANT WIND DIRECTION.
No. RESULTANT WIND SPEED (KTS.)
No. AVERAGE WIND SPEED (KTS.) REGARDLESS OF DIRECTION.
60° N.
55 N.
50 N.
45 N.
40 N.
35 N.
30 N.
25 N.
20 N.
180° W.
175 W.
170 W.
165 W.
160 W.
155 W.
150 W.
145 W.
140 W.
135 W.
130 W.
125 W.
120 W.
115 W.
1004
1008
1012
1016
1020
1016

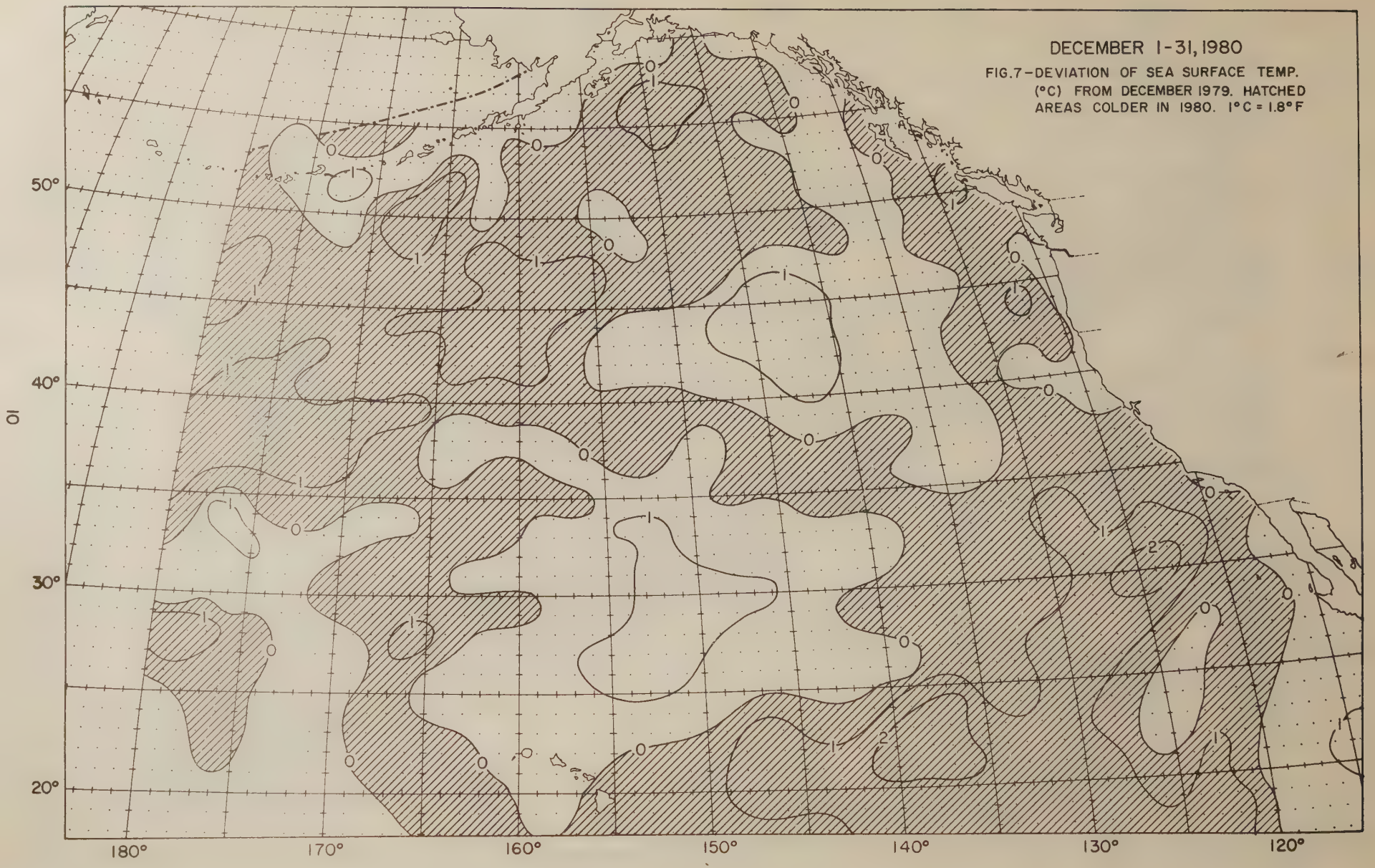

DECEMBER 1980
FIG. 2 — OBSERVED VALUES
-0000- BAROMETRIC PRESSURE (MILLIBARS).
RESULTANT WIND DIRECTION.
No. RESULTANT WIND SPEED (KTS.)
No. AVERAGE WIND SPEED (KTS.) REGARDLESS OF DIRECTION.
60° N.
55 N.
50 N.
45 N.
40 N.
35 N.
30 N.
25 N.
20 N.
180° W.
175 W.
170 W.
165 W.
160 W.
155 W.
150 W.
145 W.
140 W.
135 W.
130 W.
125 W.
120 W.
115 W.
1004
1000
996
1004
1008
1012
1016
1016
1020
1016

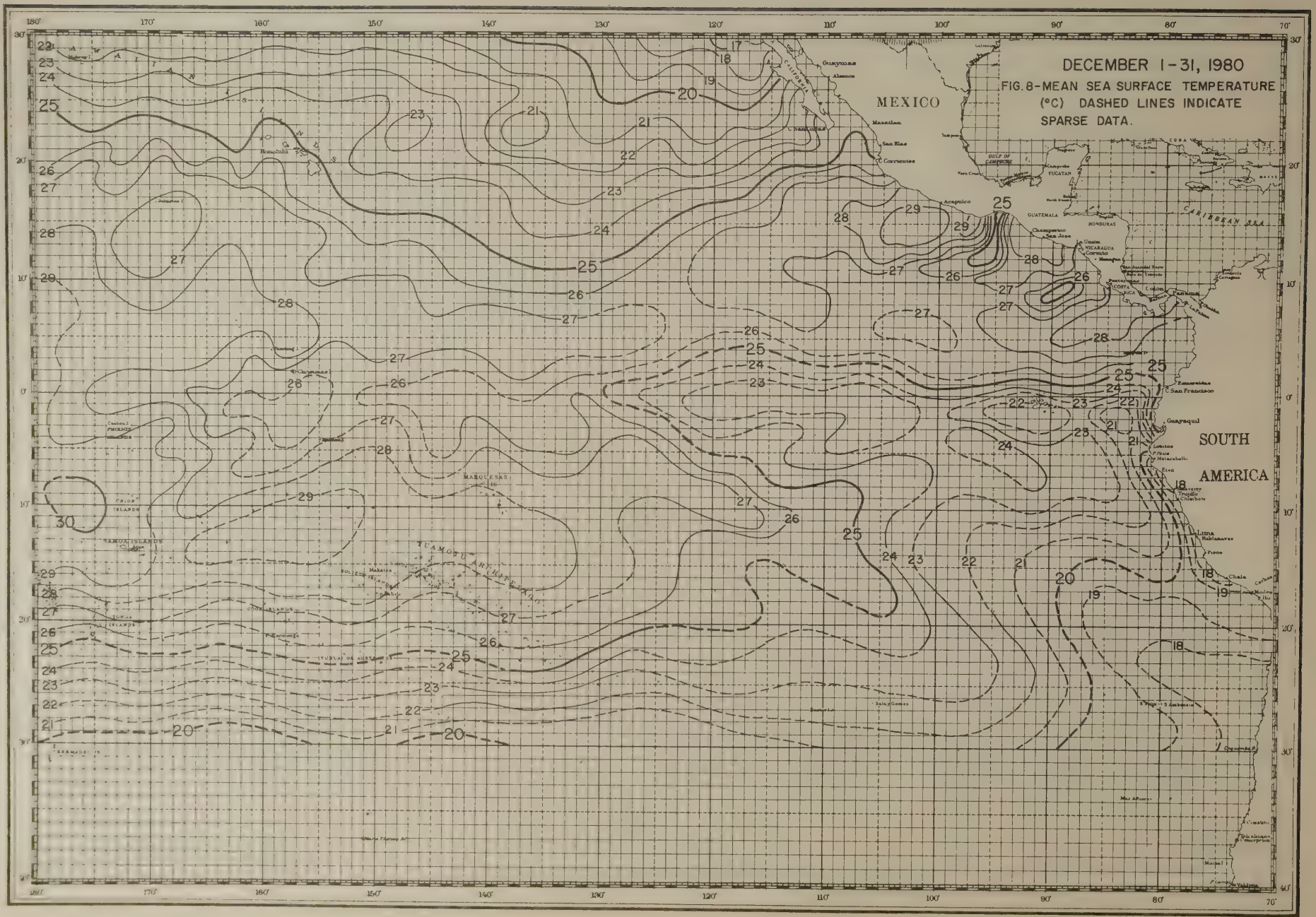

DECEMBER 1-31, 1980
FIG.3-MEAN SEA SURFACE TEMPERATURE (°C)
6.6
8.8
9.1
9.4
12.7
14.4
14.5
50°
40°
30°
20°
180°
170°
160°
150°
140°
130°
120°

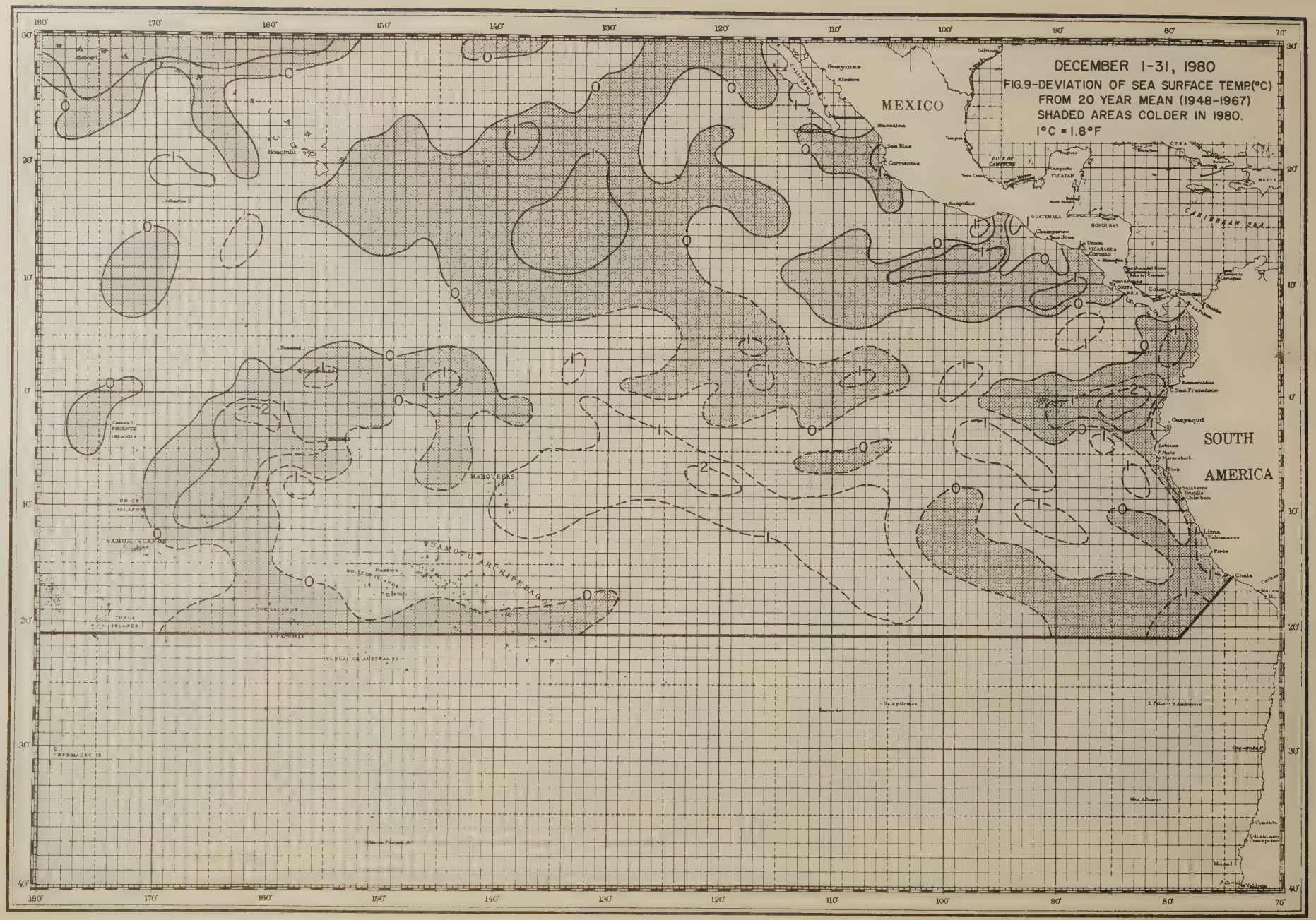

DECEMBER 1-31, 1980
FIG.4-MEAN SEA SURFACE TEMPERATURE (°C)
60°
50°
40°
30°
20°
120°
130°
140°
150°
160°
170°
180°


DECEMBER 1-31, 1980
FIG. 5 - DEVIATION OF SEA SURFACE TEMP. (°C) FROM 20 YEAR MEAN (1948-1967). HATCHED AREAS COLDER IN 1980.
1°C = 1.8°F
50°
40°
30°
20°
180°
170°
160°
150°
140°
130°
120°

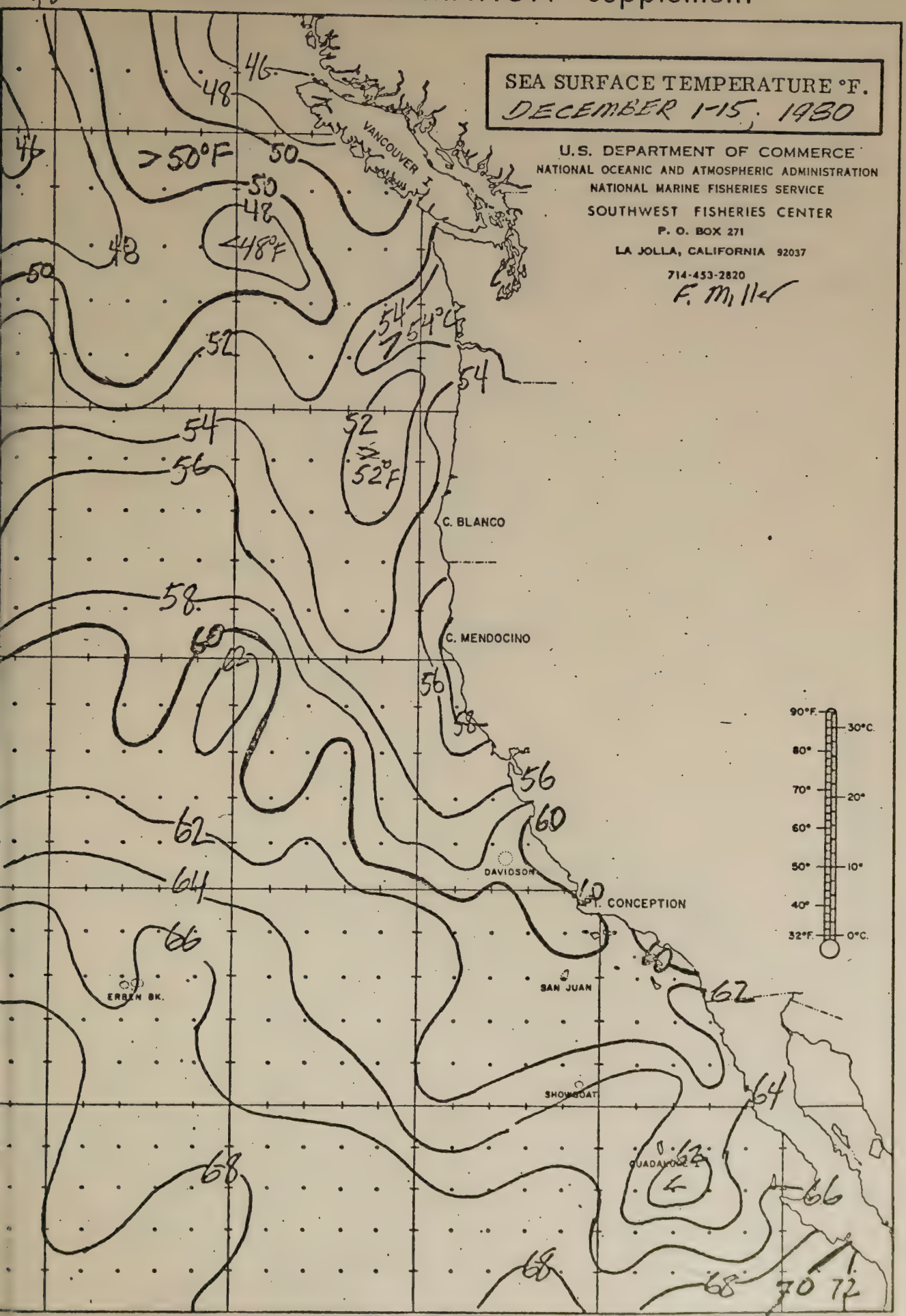

DECEMBER 1-31, 1980
FIG.6 - DEVIATION OF SEA SURFACE TEMP. (°C) FROM 20 YEAR MEAN (1948-1967). HATCHED AREAS COLDER IN 1980. 1°C = 1.8°F
60°
50°
40°
30°
20°
120°
130°
140°
150°
160°
170°
180°


DECEMBER 1-31, 1980
FIG.7-DEVIATION OF SEA SURFACE TEMP. (°C) FROM DECEMBER 1979. HATCHED AREAS COLDER IN 1980. 1°C = 1.8°F
50°
40°
30°
20°
180°
170°
160°
150°
140°
130°
120°


DECEMBER 1-31, 1980
FIG. 8-MEAN SEA SURFACE TEMPERATURE (°C) DASHED LINES INDICATE SPARSE DATA.
MEXICO
SOUTH AMERICA
CARIBBEAN SEA
GULF OF CALIFORNIA
GULF OF CAMPECHE
YUCATAN
GUATEMALA
HONDURAS
NICARAGUA
COSTA RICA
PANAMA
Acapulco
Guaymas
Mazatlan
San Blas
Corrientes
Manzanillo
Campeche
Veracruz
Tampico
Cuba
Honolulu
HAWAIIAN ISLANDS
Guayaquil
Lima
Chile
Callao
Pisco
Trujillo
Chimbote
San Francisco
Esmeraldas
Buenaventura
Cristobal
Colon
Puntarenas
San Jose
Corinto
Salina Cruz
Manzanillo
MARQUESAS
SAMOA ISLANDS
TUAMOTU ARCHIPELAGO
TONGA ISLANDS
COOK ISLANDS
TUBUAI OR AUSTRAL IS.
BERMUDA
CHRISTMAS ISLAND
PHOENIX ISLANDS
Malden Island
Palmerston
Easter Island
Juan Fernandez
Salas y Gomez
San Ambrosio
Mas Afuera
Mas a Tierra
Valdivia
Corcovado
Guamblin
Chiloe
Concepcion
Talcahuano
Valparaiso
Coquimbo
Antofagasta
Iquique
Arica
Callao
Pisco
Chimbote
Salaverry
Paita
Tumaco
Buenaventura
Esmeraldas
San Francisco
Manta
Puerto Bolivar
Guayaquil
Tumbes
Talara
Payta
Pimentel
Chicama
Huanchaco
Supe
Huacho
Chancay
Matarani
Ilo
Arica
Iquique
Tocopilla
Mejillones
Taltal
Chanaral
Caldera
Huasco
Coquimbo
Valparaiso
San Antonio
Talcahuano
Corral
Ancud
Puerto Montt
Chiloe
Corcovado
Guamblin
Melinka
Puerto Aysen
Puerto Chacabuco
Puerto Natales
Punta Arenas
Ushuaia
Rio Grande
Comodoro Rivadavia
Puerto Deseado
Puerto San Julian
Puerto Santa Cruz
Puerto Madryn
Bahia Blanca
Mar del Plata
Buenos Aires
Montevideo
Colonia
Nueva Palmira
Fray Bentos
Paysandu
Salto
Concordia
Colon
Puerto Cabello
La Guaira
Carupano
Cumana
Guanta
Puerto La Cruz
Guiria
Trinidad
Port of Spain
Scarborough
Tobago
Georgetown
Paramaribo
Cayenne
Fortaleza
Natal
Recife
Maceio
Aracaju
Salvador
Ilheus
Vitoria
Rio de Janeiro
Santos
Paranagua
Florianopolis
Porto Alegre
Rio Grande
Pelotas
Montevideo
Buenos Aires
Mar del Plata
Bahia Blanca
Puerto Madryn
Puerto San Julian
Puerto Santa Cruz
Puerto Deseado
Comodoro Rivadavia
Rio Grande
Ushuaia
Punta Arenas
Puerto Natales
Puerto Aysen
Puerto Chacabuco
Melinka
Puerto Montt
Ancud
Corral
Talcahuano
San Antonio
Valparaiso
Coquimbo
Caldera
Huasco
Chanaral
Taltal
Mejillones
Tocopilla
Iquique
Arica
Antofagasta
Callao
Pisco
Chimbote
Salaverry
Paita


DECEMBER 1-31, 1980
FIG.9-DEVIATION OF SEA SURFACE TEMP.(°C)
FROM 20 YEAR MEAN (1948-1967)
SHADED AREAS COLDER IN 1980.
1°C = 1.8°F
MEXICO
SOUTH
AMERICA
CARIBBEAN SEA
GUATEMALA
HONDURAS
NICARAGUA
COSTA RICA
Honolulu
Acapulco
Guayaquil
Lima
Chile
MARQUESAS
SAMOA ISLANDS
TUAMOTU ARCHIPELAGO
180°
170°
160°
150°
140°
130°
120°
110°
100°
90°
80°
70°
30°
20°
10°
0°
10°
20°
30°
40°

FISHING INFORMATION – supplement



FISHING INFORMATION – supplement